

Statewide Urban Bus Standards and Fleet Rule for Transit Agencies in South Coast Air District

Public Workshop

**April 7, 2005 - El Monte
1:30 - 4:00 PM**



Why Reduce Diesel Emissions?

- Diesel Engines are Long Lived
- NO_x is an Ozone Precursor
- Diesel PM is a Toxic Air Contaminant

Health Impacts of Diesels in California

- Annual health impacts
 - 2,900 premature deaths
 - 3,600 hospital admissions
 - 240,000 asthma attacks/respiratory symptoms
 - 600,000 lost days of work
- By comparison
 - 3,700 deaths from car accidents
 - 2,000 homicides

What Vehicles Are We Talking About?

Urban Bus

- Passenger Carrying Vehicle
- Powered by Heavy Heavy-Duty Diesel Engine or of a Type Normally Powered By a Heavy Heavy-Duty Diesel Engine
- Load Capacity of 15 or More
- Fixed Route/Intracity Operation
- Generally 35+ Feet in Length
- Owned/Operated by a Transit Agency

Transit Fleet Vehicles

- Passenger Carrying Vehicle or Non-Revenue Vehicle
- Vehicle Greater than 8,500 GVWR
- Powered by Heavy-Duty Engine
- Diesel and Alternative-Fuels
- Owned/Operated by a Transit Agency
- Not an Urban Bus

Current California Programs

- Heavy-Duty Truck Engine Standards
- UB New Engine Standards
- UB Fleet Purchasing, Fuel, and Emission Reduction Requirements
- TFV Fleet Emission Reduction Requirements

Heavy-Duty Truck New Engine Standards

Emission Standards (g/bhp-hr)		
Model Year	NOx	PM
1988	6.0	0.6
1990	6.0	0.6
1991	5.0	0.25
1994	5.0	0.10
1998	4.0	0.10
October 2002	2.2 ₍₁₎	0.10
2004	2.2 ₍₁₎	0.10
2007	1.2 ₍₂₎	0.01
2010	0.2	0.01

(1) Nominal NOx based on 2.4 g/bhp-hr NMHC+NOx or 2.5 g/bhp-hr NMHC+NOx with 0.5 g/bhp-hr NMHC cap.

(2) Approximate value based on averaging.

Urban Bus

New Engine Standards

- Oct. 1, 2002: 0.01 g/bhp-hr PM
- 2004-2006: 0.5 g/bhp-hr NOx
 - Diesel, Dual fuel, Bi-fuel
- 2004-2006: 2.4 g/bph-hr NOx+NMHC or optional 1.8 - 0.3 g/bhp-hr NOx+NMHC
 - Alternative fuel
- 2004-2006: 1.8 g/bhp-hr NOx
 - Diesel HEB (w/ ARB Purchase Approval)
- 2007+: 0.2 g/bhp-hr NOx

Urban Bus Fleet Requirements

- Diesel/Alt Fuel Path Selection
- Ultra-low Sulfur Fuel July 2002
- 4.8 g/bhp-hr NO_x Average October 2002
- Multiple Stage PM Reduction Requirement
- ZEB Demo and Purchase Requirement

Transit Fleet Vehicle Fleet Requirements

Applies to Transit Fleet Vehicles, not
Urban Buses

Date	% PM reduction from baseline	Fleet NOx Average
January 1, 2005	0%	na
December 31, 2007	40%	3.2 or retire 1997 and earlier MY
December 31, 2010	80%	2.4 or retire 2001 and earlier MY

SCAQMD Rule 1192

- Adopted 2000
- Applies to Public Transit Fleets With 15 or More Transit Vehicles
- Alt Fuel Purchase/Lease Requirement Beginning 2001

Why is the ARB Considering Transit Bus Regulation?

- U.S. Supreme court ruled that certain aspects of Rule 1192 are preempted by federal authority
- ARB and U.S. EPA determined Rule 1192 not appropriate for waiver without state adoption
- ARB agreed to evaluate four fleet rules - including Rule 1192 affecting transit buses

What Are the Regulatory Concepts for Transit Agencies?

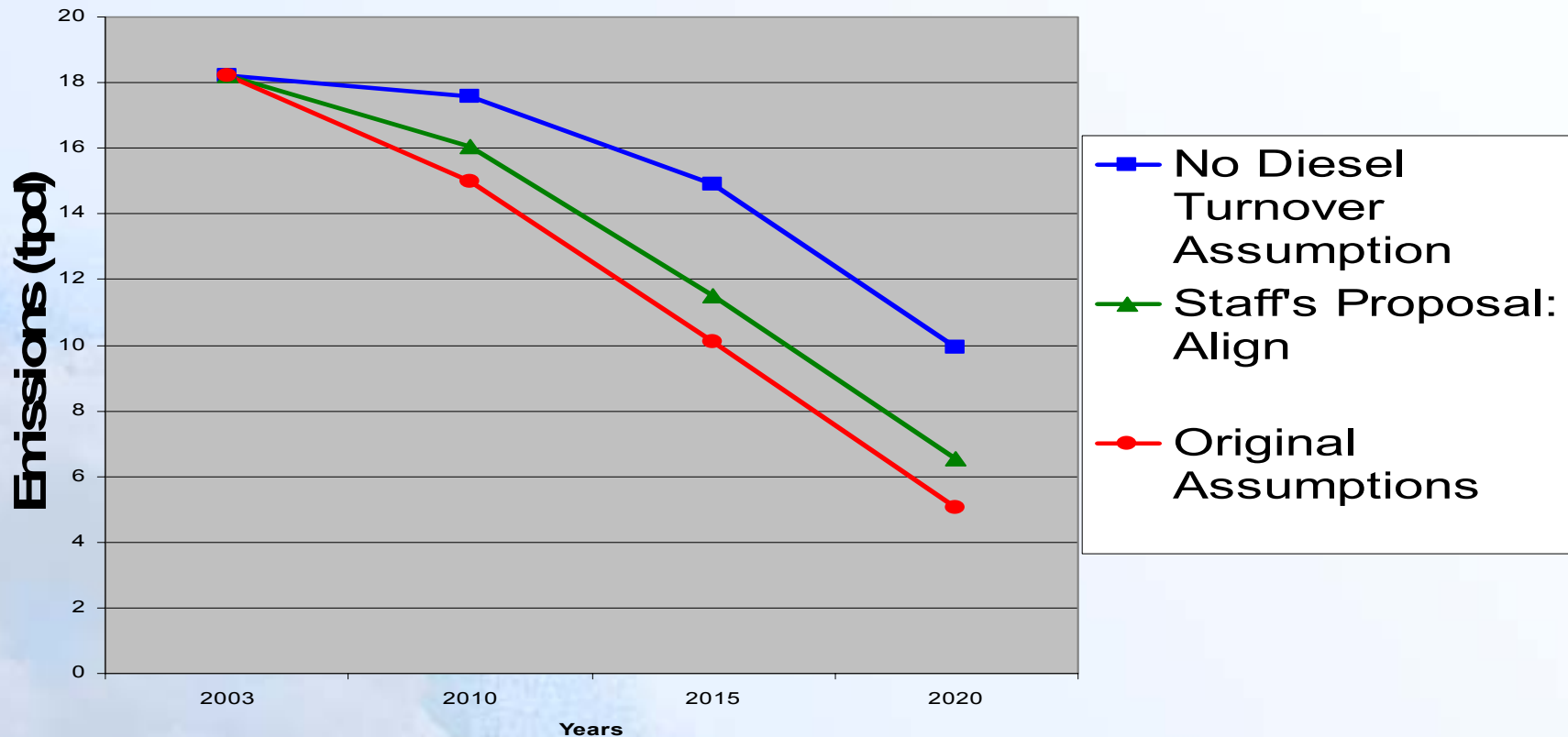
- Statewide
 - Alignment of Urban Bus Standards with HDT Standards in 2007
- South Coast
 - Urban Bus Purchase/Lease Requirement

UB Standard Alignment with HDT Standards: Proposal

- Need for Change
 - No Diesel Buses Available for 2007-2009
 - Keeps the Oldest, Dirtiest Diesel Buses on the Road
- Proposal to Modify Section 1956.1 and 1956.8
 - Harmonize Urban Bus Engine Emissions Standards with California's 2007 HHD Truck Engine Standards

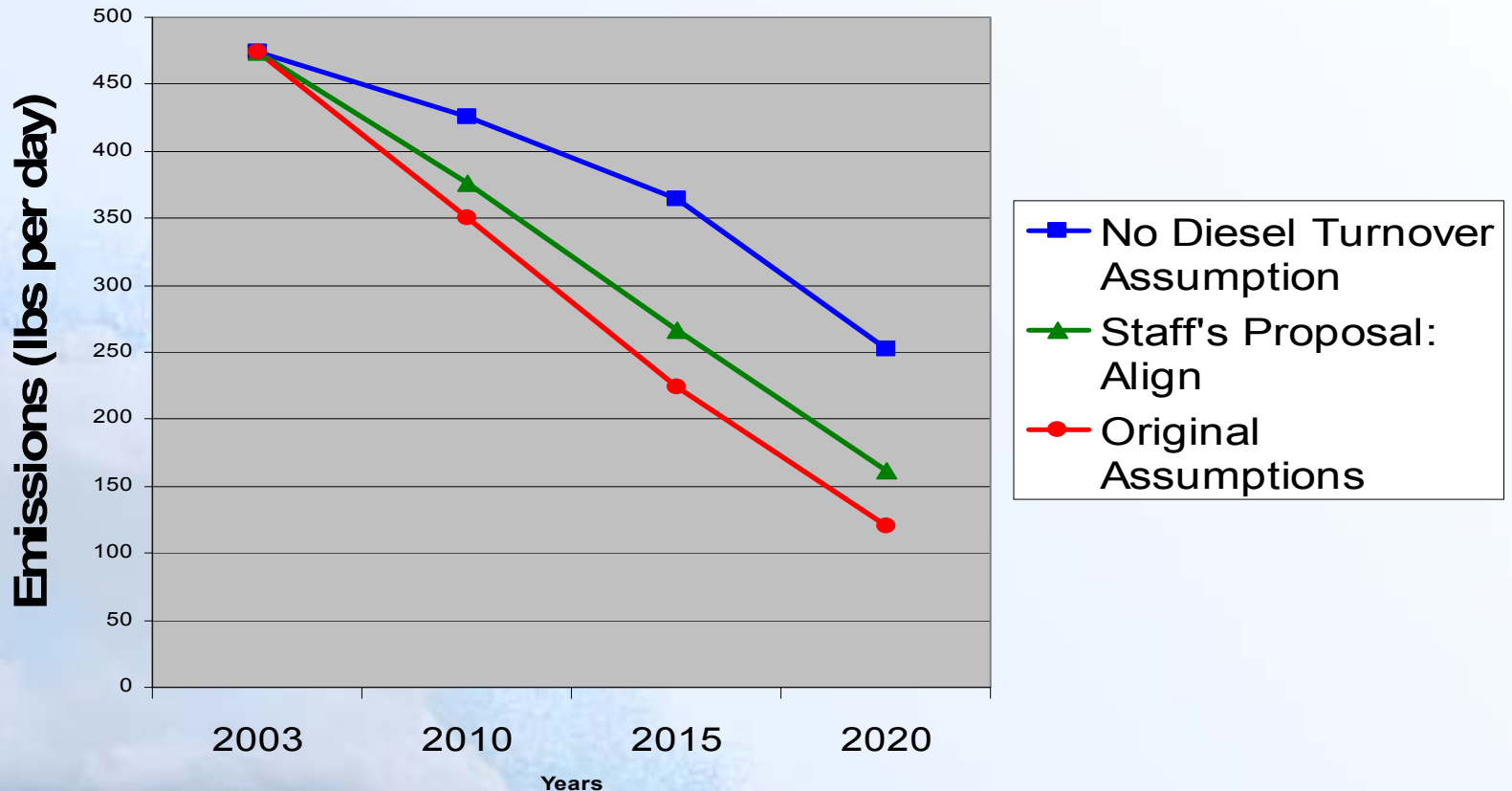
Recovered Benefits Proposed Rule - Alignment

NOx Emissions - Urban Buses



Recovered Benefits Proposed Rule - Alignment

PM Emissions - Urban Buses



Cost Impacts

- Alignment
 - Lower Cost to Transit Agencies on Diesel Path
 - No Effect for Transit Agencies on Alt Fuel Path

SC Urban Bus: Proposal

- Applies only to Transit Agencies Operating in the South Coast
- Alternative Fuel Path is Mandatory
- For TA on Diesel Path, Change Applies 1/1/2006.

SC Transit Agencies Current Urban Bus Fuel Path Choices

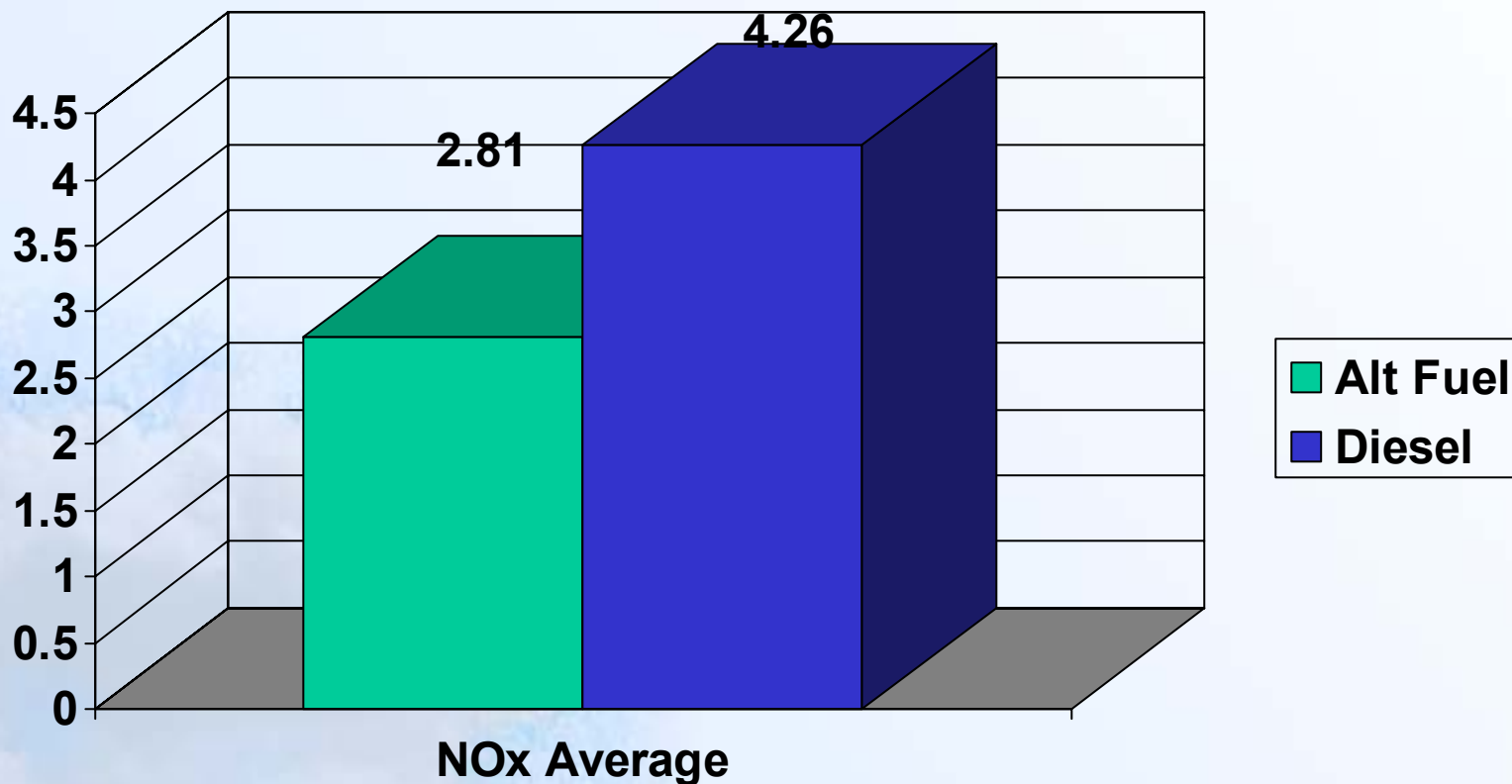
Alternative Fuel Path

**Commerce
Culver City
Foothill
Glendale
L.A. MTA
L.A. DOT
Omnitrans
Orange County
Riverside
Santa Monica
Sun Line**

Diesel Path

**Gardena
Long Beach
Montebello
Norwalk
Santa Clarita
Torrance**

SC Urban Bus NOx Fleet Averages



Preliminary NOx Emission Benefits

- SCAQMD Alt Fuel Path
 - Six Transit Agencies Affected
 - 15-30 Buses Turnover Per Year to Alt Fuel (Result of Rule)
 - Estimated 3.65 tpy NOx in 2010

Preliminary Cost Estimates

- SCAQMD Alt Fuel Path
 - CNG Capital Increment Over Diesel: \$85 to \$100K per Bus
 - BUT Costs Reduced by
 - 80% (diesel) to 83% (alt fuel) FTA Match
 - Incentive Funding
 - CNG O&M Increment Over Diesel: \$16K (Lifetime per Bus)

No Change Proposed for Transit Fleet Vehicles

- Emission Reductions Obtained Through the Current ARB TFV Rule
- ARB's Rule Achieves Additional Reductions Beyond 1192

Comparison of Scope of 1192 and ARB Fleet Rule

- 1192
 - 14,000 lbs. GVWR and Above
 - Fleets with 15 or More Vehicles
 - Impacts New Purchases/Leases Only
- ARB Fleet Rule for Transit Agencies
 - 8,500 lbs. GVWR and Above
 - Includes all Transit Agencies
 - Includes all TFV (Paratransit, Non-revenue)
 - Impacts In-use and New Vehicles

Preliminary TFV: NOx Emissions

Rule 1192 & ARB's Fleet Requirement

SCAQMD-TFV NOx Analysis Summary					
	# of Transit Agencies	# of Vehicles Affected	# of Alt. Fuel Vehicles	% Alt. Fuel Vehicles in Fleet	Reductions 2004 to 2007
SCAQMD 1192	18	401	261	65.1%	21.2
ARB TFV	55	866	357	41.2%	23.5
		Additional ARB tons/yr:			2.3

Incentive Funding - Example

- Incentives based on surplus emissions
- No incentives 2007-2009
 - Unless urban bus aligns with truck standards, or
 - Engine certified below 0.2 g/bhp-hr

Summary

- Align 2007 Urban Bus Engines with 2007 HD Truck Engine Standards
- Transit Agencies in the South Coast Air District Follow Alt Fuel Path
- No Changes to Transit Fleet Vehicle Requirements

Public Process

- Public Workshop 04/07/05
- Comments Requested by 04/15/05
- Staff Report Released by 06/03/05
- Board Hearing 07/21-22/05

COMMENTS REQUESTED

- E-Mail To:
 - David Salardino, dsalardi@arb.ca.gov
 - Please cc: Nancy Steele, nsteele@arb.ca.gov
- Or Mail To: 9528 Telstar Avenue,
El Monte, CA 91731
- Or Fax To: (626) 459-4480